

REMARKS

The inventors have found, surprisingly and unexpectedly, that the use in an aerosol of nanoparticles comprising at least 10% by weight of alumina and exhibiting a number-average primary size of between 2 and 200 nm in a cosmetically acceptable medium makes it possible to give volume to hair and to obtain styling without fixing and overloading the hair. The hair can then be styled and restyled at will while retaining a natural appearance.

The present application claims a composition packaged in an aerosol device comprising:

(1) a liquid phase, which comprises, in a cosmetically acceptable medium, nanoparticles comprising at least 10% by weight of alumina and having a number-average primary size of between 2 and 200 nm, and

(2) a propellant which is dimethyl ether, a C₃₋₅ alkane, 1,1-difluoroethane, a mixture of dimethyl ether and a C₃₋₅ alkane, a mixture of 1,1-difluoroethane and dimethyl ether or a C₃₋₅ alkane, or a mixture of 1,1-difluoroethane and dimethyl ether and a C₃₋₅ alkane.

The present application also claims a process for the cosmetic treatment of hair, comprising applying to the hair and optionally rinsing the hair after an optional setting time a composition discharged from an aerosol device; the composition packaged in the aerosol device comprising:

(1) in a cosmetically acceptable medium, nanoparticles comprising at least 10% by weight of alumina and having a number-average primary size of between 2 and 200 nm, and

(2) a propellant which is dimethyl ether, a C₃₋₅ alkane, 1,1-difluoroethane, a mixture of dimethyl ether and a C₃₋₅ alkane, a mixture of 1,1-difluoroethane and dimethyl ether or a C₃₋₅ alkane, or a mixture of 1,1-difluoroethane and dimethyl ether and a C₃₋₅ alkane.

Claims 20-38 are rejected under 35 U.S.C. 102(b) as anticipated by Tanner et al. According to the Examiner, Tanner et al teaches a cosmetic composition in aerosol spray formulation wherein the zinc oxide particles are surface-treated with alumina. The particle size is 0.01 micron to 100 microns. The composition contains a propellant and a C₃₋₅ alkane (e.g., difluoroethane, dimethyl ether, butane or isobutene; col. 9, l. 20). This rejection is respectfully traversed.

Tanner et al relates to photoprotective compositions having enhanced stability that are useful for protecting human skin from the harmful effects of UV radiation, comprising:

- (1) from about 0.1% to about 10% of a dibenzoylmethane sunscreen compound,
- (2) from about 0.1% to about 20% of a surface-treated zinc oxide having a mean particle size diameter from about 0.01 microns to about 100 microns, corresponding to from 10 to 105 nm, and
- (3) from about 20 to 99.8% by weight of a carrier suitable for application to human skin.

The surface treatment materials used to surface treat the zinc oxide particles in Tanner et al can comprise from about 0.1% to about 50%, more preferably from about 0.25% to about 25%, and most preferably from about 0.5% to about 10% by weight of the surface-treated zinc oxide. Non-limiting classes of surface treatment materials useful for treating the zinc oxide particles include silicones, fatty acids, proteins, peptides, amino acids, N-acyl amino acids, monoglycerides, diglycerides, triglycerides, mineral oils, silica, phospholipids, sterols, hydrocarbons, polyacrylates, alumina and mixtures thereof. Preferred is silicone-treated zinc oxide.

Contrary to the Examiner's apparent opinion, silicones are not silicon oxide. As a matter of fact, silicones are polymers comprising $-(R_2SiO)-$ units whereas silicon oxide is a compound having the formula SiO_2 .

Also, contrary to the Examiner's opinion (see point 9 of the Office Action), methoxy-t-butylbenzoylmethane is not an equivalent of dimethylether. They are two very different molecules. As a matter of fact, methoxy-t-butylbenzoylmethane is a sunscreen compound (see col. 5, lines 35-38 and CTFA, Eighth Edition, 2000, Vol. 1, page 175) whereas dimethylether is a propellant (CTFA, Eighth Edition, 2000, Vol. 1, page 452).

The Examples of Tanner et al disclose compositions comprising silicone-coated zinc oxide and no propellant. Therefore, none of the exemplified compositions contains nanoparticles comprising at least 10% by weight of alumina.

Tanner et al does not anticipate the present invention. Tanner et al discloses a practically limitless number of surface treatment materials. There is no disclosure or suggestion within the four corners of the patent to select alumina to obtain the surprising and unexpected results of the present invention. This is especially true since Tanner et al treats human skin with a sunscreen

compound and uses the surface treatment to render zinc oxide less reactive. Applicants use alumina nanoparticles to give volume to hair and to obtain styling without fixing and overloading the hair.

Claims 33-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanner et al in view of Gosling et al. According to the Examiner, in claims 33-36, applicant claims that the composition comprises water, ethanol or other C₁-C₄ alcohol as solvent. Applicant claims less than 20 wt% water content in the composition. In claims 39-40, applicant claims a procedure for the treatment of hair using the formulation. The Examiner states Gosling et al teaches the use of water (4.3-50 wt%; col. 24, ls. 5-60) and ethanol (30-50 wt%; col. 24, Examples 25 and 27) as solvent - providing various formulations of the composition. This rejection is respectfully traversed.

The main differences between the present invention and Tanner et al are the use of nanoparticles comprising at least 10% by weight of alumina and the compulsory combination thereof with a specific propellant in an aerosol device. The problem raised in Tanner et al consists in improving chemical and physical stabilities and photostability. Consequently, Tanner et al neither teaches nor suggests the use of nanoparticles comprising at least 10% by weight of alumina and the compulsory combination thereof with a specific propellant in an aerosol device, in order to solve the problem of the present invention. Therefore, the present invention as claimed is not obvious in view of Tanner et al.

Gosling et al describes new antiperspirant active materials based on basic aluminum compounds having the formula:



wherein X is Cl, Br or I,

as well as compositions comprising them.

Gosling et al neither indicates nor suggests any aerosol composition comprising at least 10 weight % alumina nanoparticles in a liquid phase, and a specific propellant as claimed. Moreover, the problem addressed in the present application does not consist in improving efficacy of antiperspirants as taught by Gosling et al, but consists in giving volume to hair and obtaining styling without fixing and overloading the hair. Therefore, the invention as claimed is not obvious in view of Gosling et al.

Neither of these documents taken alone or in combination teaches the problem addressed in the present application. As a matter of fact:

(1) Tanner et al relates to the problem of improving chemical and physical stabilities and photostability; and

(2) Gosling et al relates to the problem of improving efficacy of antiperspirants. Therefore, there was absolutely no motivation for one of ordinary skill in the art who wanted to give volume to hair and obtain styling without fixing and overloading the hair, to combine the references.

Thus, the invention as claimed in claims 20-47 would not have been obvious to one of ordinary skill in the art at the time the invention was made.

In view of the foregoing, early and favorable action is respectfully requested.

A Petition For Extension Of Time is being filed concurrently herewith.

The Commissioner is hereby authorized to charge any fees due in connection with the present response to Deposit Account 19-4293.

Respectfully submitted,



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